CLAIMS

1. A reception arrangement for receiving multicarrier symbols, each multicarrier symbol (S_1, S_2, S_3) comprising a plurality of single carrier symbols, each single carrier symbol modulating a respective carrier frequency (f_1, f_2, f_3), these single carrier symbols being transmitted simultaneously, the reception arrangement comprising means for detecting the time, or phase error, of at least one single carrier and means for correcting the phase of a sampling clock in view of the estimated timing error,

wherein the means for estimating the timing or phase error comprise, at least for one carrier, means (58_1 ... 58_N, 24, 40) for determining a parameter $\hat{e}_i$ for a carrier f_i, or a quantity proportional to the parameter $\hat{e}_i$, according to the following formula:

$$\hat{e}_i = \alpha E\left[r_{k-1}^i a_k^{i*} - r_k^i a_{k-1}^{i*}\right] \qquad (3)$$

wherein r_k^i is the detected signal for the single carrier at a time t, a_k^i is the corresponding single carrier symbol at the same time t, a_{k-1}^i and r_{k-1}^i correspond, respectively, to a_k^i and r_k^i at time t-NT, NT being the duration of transmission of a multicarrier symbol, and E[ ] means an average value on several successive symbols.

2. A reception arrangement according to claim 1, comprising means for calculating the parameters $\hat{e}_i$ for all the carriers, and means (34) for adding the values of $\hat{e}_i$ parameters.

3. A reception arrangement according to claim 2, comprising means (28) for assigning to each value $\hat{e}_i$ a weighting coefficient which depends on the quality of the transmission of the corresponding channel for the carrier.

4. A reception arrangement according to claim 3, wherein the weighting coefficient is a function of the signal to noise ratio (SNR) of the corresponding transmission channel of the single carrier.

5. A method for estimating the timing error of a received digital multicarrier signal comprising a plurality of symbols which are transmitted simultaneously at different frequencies during a given time NT, wherein the error is estimated, at least for one of the single carriers (f_i), according to the following formula:

$$\hat{e}_i = E\left[r_{k-1}^i a_k^{i*} - r_k^i a_{k-1}^{i*}\right] \qquad (3)$$

wherein r_k^i is the detected signal for the single carrier at a time t, a_k^i is the corresponding single carrier symbol at the same time t, a_{k-1}^i and r_{k-1}^i correspond, respectively, to a_k^i and r_k^i at time t-NT, NT being the duration of transmission of a multicarrier symbol, and E[ ] means an average value on several successive symbols.

6. A method according to claim 5, wherein the timing error is estimated by the calculation of the paramater $\hat{e}_i$ for all the single carriers, the multicarrier timing error signal being a weighted average of the values of said $\hat{e}_i$ parameters.

7. A method according to claim 6, wherein the weighting coefficient assigned to each parameter $\hat{e}_i$ or e_i is a function of the quality of transmission of the corresponding single carrier channel.

8. A method according to claim 7, wherein the weighting coefficient of each of the quantities $\hat{e}_i$, or e_i, is a function of the signal to noise ratio of the corresponding transmission channel.